TROSHIN, P.Z.

Blood transfusion in rural medical institutions. Zdrav. Ros. Feder. 5 no. 2:37-39 F '61. (MIRA 14:2)

1. Zaveduyushchiy otdeleniyem perelivaniya krovi respublikanskoy bol'nitsy Mordovskoy ASSR.

(BLOOD—TRANSFUSION)

TROSHIN, S.

Underground "sawmills." Sov. shakht. 11 no.9:26-27 S '62. (MIRA 15:9)

(Kuznetsk Basin--Coal mines and mining--Equipment and supplies) (Sawmills)

KORNEYEV, V., instruktor; TROSHIN, V., instruktor

Mixed crews of creative cooperation. NTO no.3:43-44 Mr '61. (MIRA 14:3)

1. Vsesoyuznyy sovet nauchno-tekhnicheskikh obshchestv.
(Kuybyshev Province—Petroleum industry)

TROSHIN, V.

Swine

Collective farm for pedigreed swine breeding. Kolkh. proizv. 12 no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

NIKULIN, I.A., prof. (Krasnoyarsk); TROSHIN, V.A., inzh. (Krasnoyarsk);
TYUKHANOV, Yu.M., inzh. (Krasnoyarsk)

Calculation of the excitation of synchronous motors with consideration of minimum energy loss. Elektrichestvo no.4:8-14 Ap '65.
(MIRA 18:5)

TROSHIN, V.A., inzh.

Comparison of individual and group methods for exciting synchronous motors of rolling mills. Prom. energ. 18 no.6: 2-3 Je '63. (MIRA 16:7)

(Rolling mills—Electric driving)
(Electric motors, Synchronous)

L 3059-66 EWT(1)/EPA(s)-2

ACCESSION NR: AR5012217

UR/0196/65/000/003/K010/K010
62-83-52:621.313.323.013.8

48
B

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 3K58

AUTHOR: Troshin, V. A.

TITLE: Selecting the law of automatic control of synchronous-motor excitation

CITED SOURCE: Tr. Vses. zaochn. energ. in-ta, vyp. 27, 1964, 95-100

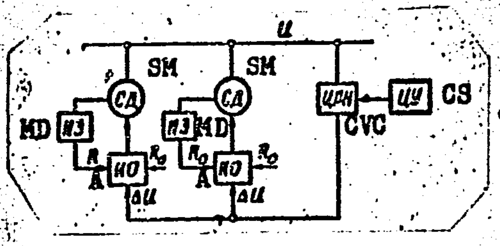
TOPIC TAGS: synchronous motor, synchronous motor excitation regulation

TRANSLATION: Various laws of automatic control of excitation of synchronous motors are briefly reviewed. The system voltage regulation by means of tap-changing-under-load transformers is compared with the automatic excitation control. When the reactive power in the supply system is insufficient, the voltage regulation by tap-changing transformers may result in still greater reactive-power deficiency and may cause unsatisfactory operation of the entire supply system. Hence, the group control of motor excitation, intended to ensure constant voltage at the substation bus, is held expedient. The accompying figure shows the structure of the group excitation regulation. Bibl. 6, figs. 1.

Card 1/2 SUB CODE: EE ENCL: 01

L 3059-66

ACCESSION NR: AR5012217 ENCLOSURE: 01



Group control of excitation of a synchronous motor

SM - synchronous motor
CS - central setting device
CVC - central voltage controller
A - actuator
MD - measuring device

Card 2/2

TROSHIN, V.P.

Electric driving of industrial rubber rolls. Kauch. i rez. 24 no.5:37 My '65. (MIRA 18:9)

1. Krasnoyarskoye otdeleniye Gosudarstvennogo proyektnogo instituta Elektroproyekt.

TROSHIN, V.A., inzh.; TROYAN, V.A., inzh.

Automatic supply of loose materials to bunkers. Mekh.i avtom.proizv. 17 no.7:25-26 Jl '63. (MIRA 16:8)
(Concrete plants--Equipment and supplies) (Electronic control)

TROSHIN, V.A., inzh.

Dependence of the reactive power of a synchronous motor on the network voltage. Izv. vys. ucheb. zav.; energ. 8 no.5:104-106 My '65. (MIRA 18:6)

1. Vsesoyuznyy zaochnyy energeticheskiy institut. Predstavlena kafedroy elektroprivoda i avtomatizatsii promyshlennykh ustanovok.

TROSHIN, V.D.

Vascular disorders of the brain in patients with myocardiac infartion. Med.sestra 21 no.11:50-52 N '62. (MIRA 16:3)
(CEREBROVASCULAR DISEASE) (HEART—INFARCTION)

TROSHIN, V.D. (Arzamas)

Combination of thrombosis of the carotid artery with myocardial infarction. Kaz. med. zhur. 4:60 Jl-Ag'63 (MIRA 17:2)

V

Country : USSR
Category: Pharmacology. Toxicology. Cardio-Vascular Agents.

Abs Jour: RZhBiol , No 6, 1959, No 27802

Author : Troshin, V.D.; Akatova, N.N.
Inst : ~~Gorki Medical~~ Institute
Title : The Application of Aprophene in Vascular Diseases of the Brain.

Orig Pub: Tr. Kliniki nervn. bolezney. Gor'kovsk. med. in-t, 1958, vyp. 1, 66-69

Abstract: Aprophene (I; alpha-diphenylproprionic acid beta-diethylaminoethyl ester hydrochloride) in a dose of 25 mg. 2-4 times daily for the duration of 10-20 days was applied for treatment of patients (12) with hypertension with cerebrospinal symptoms and atherosclerosis with a tendency to angiospasms.

Card : 1/3

V-31

V

Country : USSR
Category: Pharmacology. Toxicology. Cardio-Vascular Agents.

Abs Jour: RZhBiol., No 6, 1959, No 27802

As the result of treatment, patients' headaches decreased or stopped, as did pains in the region of the heart; sleep was restored. 15 min. after intake of I, a decrease of arterial pressure for the duration of 2 hours was objectively observed. 15 min after intake, an increase of intensity of staining was noted capillaroscopically (6). The EEG data (4) point to normalization of processes of stimulation and inhibition in all regions of the brain. General weakness, vertigo, noise in the head were observed in 8 patients. I possesses spasmolytic and cholinolytic action, which surpasses the action of papaverine and spasmolytine; the

Card : 2/3

Country : USSR V
Category: Pharmacology. Toxicology. Cardio-Vascular Agents.

Abs Jour: RZhBiol., No 6, 1959, No 27802

effect of I is less expressed in patients with atherosclerosis. It may be recommended for treatment of patients with spasms of cerebral vessels.

Card : 3/3

V-32

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001756730002-0"

TROSHIN, V.D.

Condition of temporal arterial pressure in myocardial infarction. Terap.arkh. 34 no.2:42-44 '62. (MIRA 15:3)

1. Iz kliniki nervnykh bolezney (zav. - prof. F.A. Poyemnyy), kliniki fakul'tetskoy terapii (zav. - prof. A.I. Gefter) Gor'-kovskogo meditsinskogo instituta imeni S.M. Kirova i 2-y oblastnoy bol'nitsy imeni M.F. Vladimirskogo.
(HEART—INFARCTION) (BLOOD PRESSURE)

TROSHIN, V.D.; AMOSOVA, V.V.

Study of cerebral circulation with the aid of rheoencephalography in experimental myocardial infarction. Uch. trudy GMI no.19:260-263 '65. (MIRA 18:8)

1. Iz kafedry nervnykh bolezney i kafedry operativnoy khirurgii Gor'kovskogo gosudarstvennogo meditsinskogo instituta imeni S.M. Kirova.

TROSHIN, V.D.; BELOUSOV, S.S.

Hyperreflexia of the carotid sinus and coronary insufficiency. Sov.med. 28 no.7:21-23 Jl '65. (MIRA 18:8)

1. Klinika nervnykh bolezney (zav. - dotsent Ye.P.Semenova) i klinika fakul'tetskoy terapii (zav. - prof. A.I.Gefter) Gor'kovskogo meditsinskogo instituta imeni S.M.Kirova.

TROSHIN, V. D.

Combined disorders of the cerebral and coronary circulations.
Terap. arkh. no.7:35-38 '61. (MIRA 15:2)

1. Iz kliniki nervnykh bolezney (zav. - prof. F. A. Poyemnyy), fakul'tetskoy terapevticheskoy kliniki (zav. - prof. A. I. Gefter) Gor'kovskogo meditsinskogo instituta imeni S. M. Kirova i 2-y oblastnoy bol'nitsy imeni M. F. Vladimirskogo.

(BLOOD—CIRCULATION, DISORDERS OF)

TROSHIN, V.D. (Arzamas)

Infarction of the myocardium originating during and epileptoid fit; abstract. V.D. Troshin. Kaz.med.zhur. no.1:119 Ja-F'61 (MIRA 16:11)

*

TROSHIN, V.D.

Disorders of the brain blood supply in the clinical picture of myocardial infarct. Zhur. nerv. i psikh. 60 no. 12:1576-1579 '60. (MIRA 14:4)

1. Klinika nervnykh bolezney (zav. - prof. F.A. Poyemnyy), klinika fakul'tetskoy terapii (zav. - prof. A.I. Gefter) Gor'kovskogo meditsinskogo instituta i Arzamasskaya oblastnaya bol'nitsa No. 2 (glavnyy vrach Ye.I. Mal'tsev).
(HEART—INFARCTION) (BRAIN—BLOOD SUPPLY)

TROSHIN, V.D. (Arzamas)

Subarachnoid hemorrhage in hemorrhagic capillary toxicosis. Klin. med. 38 no.9:130-131 S '60. (MIRA 13:11)

1. Iz Gor'kovskoy oblastnoy bol'nitsy No.2 Arzamasa (glavnyy vrach Ye.I. Mal'tsev, nauchnyy rukovoditel' - prof. F.A. Poyemnyy).
(BRAIN—HEMORRHAGE) (PURPURA (PATHOLOGY))

TROSHIN, V. D., Cand. Medic. Sci. (diss) "Materials for Study of Clinical Nature of Severe Disturbance of Brain Blood Circulation in case of Infract of Myocardium," Gor'kiy, 1961 17 pp. (Gor'kiy Med. Inst.) 300 copies (KL Supp 12-61, 289).

TROSHIN, V.D.; MAL'TSEV, Ye.I.

Naming the Second Gorkiy Province Hospital in honor of M.F. Vladimirskii. Sov.zdrav. 20 no.4:96 '61. (MIRA 14:5)
(ARZAMAS—HOSPITALS)

GUSEV, V.A.; MOSHNINA, M.A.; TROSHIN, V.D.

Thrombosis in the sinuses of the brain appearing in the puerperium.
Sbor. nauch. rab. Kaf. akush. i gin. GMI no.2:75-77 '60. (MIRA 15:4)

1. Iz Gor'kovskoy oblastnoy bol'nitsy No.2 (glavnyy vrach Mal'tsev, Ye.I.).
(THROMBOSIS) (PUERPERIUM) (BRAIN—DISEASES)

TROSHIN, V.D.

Serous meningitis in infectious nonspecific polyarthritis.
Terap. arkh. 35 no.1:99-100 Ja'63. (MIRA 16:9)

1. Iz Gor'kovskoy oblastnoy bol'nitsy imeni M.F.Vladimirskogo no.2 (glavnyy vrach Ye.I.Mal'tsev).
(ARTHRITIS, RHEUMATOID) (MENINGITIS)

TROSHIN, V.D., vrach; MITROFANOVA, N.V., meditsinskaya sestra

Use of vibration massage in nervous diseases. Med. sestra 20 no.8: 50-51 Ag '61. (MIRA 14:10)

1. Iz Gor'kovskoy oblastnoy bol'nitsy no.2.
(VIBRATION (THERAPEUTICS)) (NERVOUS SYSTEM—DISEASES)

L 16179-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) IJP(c)

ACC NR: AP6002400 SOURCE CODE: UR/0103/65/026/012/2176/2181

AUTHOR: Troshin, V. I. (Ryazan')

ORG: None

38
B

TITLE: Algebraic minimization of incompletely defined sequential machines

SOURCE: Avtomatika i telemekhanika, v. 26, no. 12, 1965, 2176-2181

TOPIC TAGS: computer theory, Boolean algebra, algorithm, minimization

ABSTRACT: Earlier papers concerning the calculation of minimal sequential machines searched for algorithms of a single minimal machine. The present article discusses the sequential machine minimization problem on a wide front and looks for all the minimal machines of a given sequential minimal machine. In contradistinction to existing minimization methods, the new algorithm utilizes the techniques of Boolean algebra and is analytical in character. The approach is applied to an illustrative example involving a maximum compatibility class (MCC) machine. The solution appears to represent an absolute minimum. In practice such machines are often quite close to the absolutely minimal. Consequently, whenever the calculation of absolutely minimal machines involves large amounts of computation, the MCC minimization approach may be employed with a substantial saving. Orig. art.

Card 1/2 UDC: 519.8

L 16179-66

ACC NR: AP6002400

O

has: 10 formulas and 8 tables.

SUB CODE: 12, 09 / SUBM DATE: 29Jan65 / ORIG REF: 002 / OTH REF: 006

Card 2/2

S/055/60/000/02/07/009

AUTHOR: Troshin, V.I.

TITLE: Two Problems on Subsonic Gas Streams

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya I, matematika, mekhanika, 1960, No. 2, pp. 59-64

TEXT: The author considers the outflow of a gas out of a) an infinite container and b) a container with an infinite width and a finite height. The obtained results are already contained in (Ref.2,3,5,6,7) in the same or a similar form, and in the incompressible limit case they lead to the formulas of N.Ye.Zhukovskiy (Ref.1). The author mentions S.A.Chaplygin and N.A.Slezkin. There are 8 references: 7 Soviet and 1 English.

ASSOCIATION: Kafedra volnovoy i gazovoy dinamiki (Department of Wave and Gas Dynamics)

SUBMITTED: April 24, 1959

Card 1/1

S/179/60/000/004/023/027
E031/E135

10.6200

AUTHOR: Troshin, V.I. (Moscow)

TITLE: The Impact of a Subsonic Gas Flow on a Plate Covering an Intake in a Channel with Parallel Walls 26

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960 No 4, pp 167-170

TEXT: First of all the more general problem is solved, in which the incident flow is bounded by walls parallel to the walls of the channel. The solution is derived by Fal'kovich's method. The limiting transition is made to the case of unbounded flow of the gas. By symmetry only the upper half of the flow need be considered. The boundary conditions in the hodograph plane are stated. Following Fal'kovich the solution is sought in the form of a series of terms $z_n(\tau)\sin 2n\theta$, where $\tau = v^2/v_{max}$, and θ is the angle of inclination of the velocity to the x-axis, or the combination of such a series with a similar series involving another independent integral of Chaplygin's equation, different from $z_n(\tau)$. In this way the stream function is evaluated in different ranges of τ. It is required that in each range the

1/B

Card 1/2

S/179/60/000/004/023/027
E031/E135

The Impact of a Subsonic Gas Flow on a Plate Covering an Intake in a Channel with Parallel Walls

stream function be an analytic continuation of that in the previous range. This leads to a system of equations for the coefficients in the series. Expressions are obtained for the length of the plate and its distance from the intake in the channel. The passage to the limit of an unbounded flow is now made in these expressions. The solutions of two other problems, that of the flow of a gas out of a vessel of infinite width and finite height, and that of the flow of a gas out of an infinite vessel with an infinitely long exit pipe, which follow from the considerations of the paper, are also briefly given. There are 4 figures and 5 references: 1 English and 4 Soviet.

SUBMITTED: June 19, 1959

Card 2/2

KONSTANTINOV, B.P.; TROSHIN, V.P.

Determination of the kinetic hydration numbers of Li^+ ions in highly concentrated LiCl solutions. Zhur.prikl.khim. 36 no.2:449-451 F '63. (MIRA 16:3)

(Lithium chloride) (Hydration)

KONSTANTINOV, B.P.; TROSHIN, V.P.

Electroosmotic movement of highly concentrated LiCl solutions. Zhur.prikl. khim. 36 no.2:447-449 F '63. (MIRA 16:3)

(Lithium chloride) (Electroosmosis)

KONSTANTINOV, B.P.; TROSHIN, V.P.

Measurement of the transport number of ions relative to the solution. Zhur.prikl.khim. 35 no.11:2420-2426 N '62. (MIRA 15:12)
(Ions—Migration and velocity) (Solution (Chemistry))

TROSHIN, V.P.

Effect of the hydration of ions on the process of alignment in electrolyte solutions. Zhur.prikl.khim. 36 no.6:1342-1344 Je '63. (MIRA 16:8)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR.
(Electrolyte solutions) (Ions—Migration and velocity) (Hydration)

TROSHIN, V.P.

Relative method for measuring the hydration numbers of ions in solutions of highly concentrated electrolytes. Zhur.prikl.khim. 36 no.6:1344-1346 Je '63. (MIRA 16:8)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR.
(Electrolyte solutions) (Hydration)

TROSHIN, V.P.

Relative difference in mobilities of K^{39} and K^{41} isotope ions. Zhur. fiz.khim. 38 no.8:2062-2065 Ag '64. (MIRA 18:1)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR.

BAKULIN, Ye.A.; TROSHIN, V.P.; FIKS, V.B.

Temperature dependence of the relative difference in mobilities of isotopic lithium ions. Zhur. fiz. khim. 38 no.9:2262-2263 S '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

KRAMER-AGEYEV, Ye.A.; TROSHIN, V.S.

Pulse jitter in proportional counters. Vop. doz. i zashch. ot izluch. no.2:185-190 '63. (MIRA 17:3)

TROSHIN, V. S.

95

S/089/62/013/006/019/027
B102/B186

AUTHORS: G. T. and M. R.

TITLE: Nauchnaya konferentsiya Moskovskogo inzhenerno-fizicheskogo instituta (Scientific Conference of the Moscow Engineering Physics Institute) 1962

PERIODICAL: Atomnaya energiya, v. 13, no. 6, 1962, 603 - 606

TEXT: The annual conference took place in May 1962 with more than 400 delegates participating. A review is given of these lectures that are assumed to be of interest for the readers of Atomnaya energiya. They are following: A. I. Leypunskiy, future of fast reactors; A. A. Vasil'yev, design of accelerators for superhigh energies; I. Ya. Pomeranchuk, analyticity, unitarity, and asymptotic behavior of strong interactions at high energies; A. B. Migdal, phenomenological theory for the many-body problem; Yu. D. Piveyskiy, deceleration of medium-energy antiprotons in matter; Yu. M. Kogan, Ya. A. Iosilevskiy, theory of the Mössbauer effect; M. I. Ryazanov, theory of ionization losses in nonhomogeneous medium; Yu. B. Ivanov, A. A. Rukhadze, h-f conductivity of subcritical plasma;

Card 1/4

36

Nauchnaya konferentsiya... S/089/62/013/006/019/027
B102/B186

Ye. Ye. Lovetskiy, A. A. Rukhadze, electromagnetic waves in nonhomogeneous plasma; Yu. D. Kotov, I. L. Rozental', the origin of fast cosmic muons; Yu. M. Ivanov, muon depolarization in solids; V. G. Varlamov, Yu. M. Grashin, B. A. Dolgoshein, V. G. Kirillov-Ugryumov, V. S. Roganov, A. V. Samoylov, μ^- capture by various nuclei; V. S. Demidov, V. G. Kirillov-Ugryumov, A. K. Ponosov, V. P. Protasov, F. M. Sergeyev, scattering of π^- mesons at 5 - 15 Mev in a propane bubble chamber; S. Ya. Nikitin, M. S. Aynutdinov, Ya. M. Selektor, S. M. Zombkovskiy, A. F. Grashin, muon production in π^-p interactions; B. A. Dolgoshein, spark chambers; N. G. Volkov, V. K. Lyapidevskiy, I. M. Obodovskiy, study of operation of a convection chamber; K. G. Pinogenov, production of square voltage pulses of high amplitudes; G. N. Alekseakov, problems of color vision; V. K. Lyapidevskiy, relation between number of receivers and number of independent colors; Ye. M. Kudryavtsev, N. N. Sobolev, N. I. Tisengausen, L. N. Tunitskiy, F. S. Fayzulov, determination of the moment of electron transition of oscillator forces and the widths of the Schuhman-Runge bands of molecular oxygen; B. Ye. Gavrilov, A. V. Zharikov, V. I. Rayko, decomposition of the volume charge of intense ion beams; Ye. A. Kramer-Ageyev, V. S. Troshin, measurement of neutron spectra; G. G. Doroshenko, new methods of fast-neutron recording; V. I. Ivanov, dosimetry terminology; R. M. Voronkov,

Card 2/4

DRYUK, A.N., inzh.; NIKOL'SKIY, O.K.; PETUKHOV, A.P.; TROSHIN, V.A.

Experience in designing the electrical equipment of a gas compressing station. Prom. energ. 20 no.2:43-44 '65. (MIRA 18:4)

TROSHIN, V.P.

Transport numbers and hydration of H+ ions in highly concentrated nitric acid solutions. Elektrokhimiia 1 no.8:1015-1019 Ag '65. (MIRA 18:9)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

TROSHIN, V.P.

Transport number, mobility, and hydration of lithium ions in highly concentrated $LiNO_3$ aqueous solutions. Elektrokhimiia 1 no.6:695-699 Je '65. (MIRA 18:7)

1. Fiziko-tekhnicheskiy institut imeni Ioffe, Leningrad.

ANTONOV, Mikhail Vasil'yevich; RADIN, Vladimir Isaakovich, kand.tekhn.nauk, dotsent; TROSHIN, Viktor Nikolayevich

Use of the third harmonic of the field for the excitation of synchronous generators. Izv.vys.ucheb.zav.; elektromekh. 8 no.3:300-305 '65. (MIRA 18:5)

1. Zamestitel' glavnogo konstruktora Moskovskogo elektromekhanicheskogo zavoda imeni Vladimira Il'icha (for Antonov). 2. Glavnyy konstruktor Moskovskogo elektromekhanicheskogo zavoda imeni Vladimira Il'icha (for Radin). 3. Nachal'nik elektromashinnoy laboratorii Moskovskogo elektromekhanicheskogo zavoda imeni Vladimira Il'icha (for Troshin).

KRAMER-AGEYEV, Ye.A.; TROSHIN, V.S.

Spectrum of photoneutrons from a uranium target. Vop.doz. i zashch. ot izluch. no.3:12-15 '64. MIRA 18:2)

L 22379-66 EWT(m)/EPF(n)-2/EWA(h)

ACC NR: AP6007957 SOURCE CODE: UR/0089/66/020/002/0161/0162

41 39 B

AUTHORS: Kramer-Ageyev, Ye. A.; Troshin, V. S.

ORG: none

19

TITLE: Angular distribution of the doses of neutrons scattered by shields

SOURCE: Atomnaya energiya, v. 20, no. 2, 1966, 161-162

TOPIC TAGS: neutron scattering, angular distribution, radiation dosimetry, reactor shielding

ABSTRACT: The authors measured the angular distribution of neutron doses behind shields of water (5 -- 15 cm thick), concrete (10 -- 60 cm), and graphite (20 cm). The neutron source was the (γ, n) reaction in a uranium target in a linear 30-MeV electron accelerator. The neutron radiation was collimated through a channel in the accelerator shield. The angular divergence of the beam was close to 3° and the diameter of the channel at the output was 20 cm. The neutron detector was the 'equal dose' dosimeter described by Kh. D. Androsenko and

Card 1/2 UDC: 539.125.52

2

L 22379-66

ACC NR: AP6007957 2

G. N. Smirenkin (Pribory i tekhnika eksperimenta No. 5, 4, 1962). A boric-acid solution shield was used to eliminate the neutrons scattered by the surrounding objects. The results in all three materials are found to be independent of the thickness of the shield and similar to the results obtained by others for polyethylene. In addition, the angular distribution of slow neutrons was measured. All angular distributions had a similar appearance and the curves differed essentially only in the magnitude of the dose as a function of the shield material. The authors thank O. I. Leypunskiy and M. I. Pevzner for valuable hints and for a discussion of the results. Orig. art. has: 3 figures.

SUB CODE: 20/18/ SUBM DATE: 20Sep65/ ORIG REF: 004/

Card 2/2dda

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001756730002-0"

L 1163-66 EWT(m)/EPF(n)-2/EWA(h)

ACCESSION NR: AT5023149 UR/2892/65/000/004/0061/0067

44,55

AUTHOR: Kramer-Ageyev, Ye. A.; Troshin, V. S. 44,55 19,44,55 44 B+1

TITLE: Methods of analyzing the spectra of intermediate neutrons obtained on a spectroscope during flight time

44,55

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity ot izlucheniy, no. 4, 1965, 61-67

TOPIC TAGS: photonuclear reaction, neutron spectrum, uranium, radiation dosimetry

ABSTRACT: Neutrons generated as a result of a photonuclear reaction in a uranium target and passing through a collimating channel 3 meters long and 20 cm in diameter came into contact with a shielding barrier in their path. The distance from the barrier to the point of observation was 7.2 meters. Types SNM-0-5 and SNM-8 counters were used as detectors. The time distribution of the impulses was studied with a variation of a type AI-100 analyzer. The flight of the neutrons had an equal probability within the time interval from 0 to 0.5 microseconds. The form in time of the lines of the boron counters is explained by the

Card 1/2

L 1163-66
ACCESSION NR: AT5023149

finite nature of the diffusion time of the electrons toward the region of collision ionization, and depends on the dimensions of the counters, gas pressure, applied voltage, and level of discrimination. Since theoretical prediction of the form of the lines is difficult, they were determined experimentally. The article derives an integral equation for the instrument spectrum and goes on to give details of three approximate methods for its solution. These methods are 1) the method of polygonal expansions, involving the use of matrices; 2) a method analogous to the method of counter efficiency; and, 3) a method of analyzing the instrument spectrum based on complete resolution of the system. It is claimed that the above methods are especially valuable for the case of radiation with neutrons with short flight times. Orig. art. has: 7 formulas and 6 figures

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NR REF SOV: 001

OTHER: 000

Card 2/2

ACCESSION NR: AT4021270 S/2892/63/000/002/0185/0190

AUTHOR: Kramer-Ageyev, Ye. A., Troshin, V. S.

TITLE: Response delay time in proportional counters

SOURCE: Voprosy* dozimetrii i zashchity* ot izlucheniy, no. 2, 1963, 185-190

TOPIC TAGS: proportional counter, response time, BF_3, neutron spectrum, SNM-5, α particles, scintillation counter, differential analyzer, jitter

ABSTRACT: The use of proportional counters in installations connected with time interval measurements can lead to substantial errors in the impulse delay at the output of the counter relative to the moment of registration. In order to correct this situation, the authors conducted a number of experiments using a counter of the SNM-5 type filled with boron trifluoride to a pressure of 250 mm Hg, cathode diameter 3.5 cm, and an anode filament of 0.005 cm. The time necessary for the electrons to drift to the filament also determines the delay time (jitter). The experimental installation is given in a block diagram. The width of the analyzer window is selected so as to include the pulse amplitude region, which corresponds to the photo peak and the Compton peak. The schematic of a single channel differential analyzer with a stable response time is given. An increase in the

ACCESSION NR: AT4021270

length of delay with the increase of voltage on the counter, as well as the change of the distribution shape are found. The authors determined magnitude of the electron mobility in BF_3 to be equal to 1.0×10^5. The obtained jitter pattern determines the proper resolution of spectrometers in transit time with boron counters and allows the corresponding processing of the spectra to be introduced. Orig. art. has: 5 figures.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Physics and Engineering Institute)

SUBMITTED: 00 DATE ACQ: 06Apr64 ENCL: 00

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B102/B186

21.6000

AUTHORS: Ivanov, V. I., Troshin, V. S.

TITLE: Calculation of the characteristics of a proportional counter for dosimetry of mixed gamma-neutron radiation

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity ot izlucheniy, no. 1, 1962, 84-89

TEXT: The main disadvantage of Herst dosimeters with proportional counters for γ-n dosimetry consists in the sub-barrier losses due to pulse discrimination. The errors caused by these losses are estimated for a spherical counter under the following assumptions: the counter walls and the filling gas have the same atomic composition; the counter dimensions are small in comparison with the mean free paths of protons and electrons in the filling gas; the radiation flux is isotropic; the specific ionization of the particles inside the counter remains constant; absorption in the walls is negligible; ionization due to recoil protons and electrons originating in the counter walls is taken into account. The proton pulse-height spectrum is calculated. It is obtained as

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Calculation of the characteristics...

$$dN/d\sigma = \int_{\sigma_{min}}^{\sigma_{max}} k(\sigma)\varepsilon d\sigma, \text{ where } k(\sigma)d\sigma = -\frac{\pi n_o}{2\varrho^3}\left[1 - \frac{E(\sigma)}{E_o}\right]\alpha\beta\sigma^{\beta-4}d\sigma; \; E = a\sigma^{\beta}$$

characterizes the dependence of the proton energy and the specific ionization - an approximation that causes an error not above 10% for $\beta = -1.4$ and $\log\alpha = 3.265$. $\varepsilon = \sigma l$ is the total ionization, proportional to the pulse height; ϱ is the density of the wall material, n_o the total number of protons produced per cm^3 of the wall material, E_o the neutron energy; σ_{min} and σ_{max} are the minimum and maximum values of specific ionization, so that σ_{min} is the maximum energy of protons produced in the wall. If dn denotes the number of pulses with amplitude between ε and $\varepsilon + d\varepsilon$, then $dn/d\varepsilon = \varepsilon k(\sigma)d\sigma$. If the difference in proton contribution in the two ε ranges is taken into account,

$$\frac{dN}{d\varepsilon} = \alpha\beta\frac{\pi n_0}{2\varrho^3}\varepsilon\left[\left(\frac{\sigma_{\text{мин}}^{\beta-3}}{\beta-3} - \frac{a}{E_0}\frac{\sigma_{\text{мин}}^{2\beta-3}}{2\beta-3}\right) - \left(\frac{\sigma_{\text{макс}}^{\beta-3}}{\beta-3} - \frac{a}{E_0}\frac{\sigma_{\text{макс}}^{2\beta-3}}{2\beta-3}\right)\right]; \quad (9)$$

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$$2R\sigma_{\text{мин}} \leqslant s \leqslant 2R\sigma_{\text{макс}}$$

$$\frac{dN}{d\varepsilon} = \frac{\pi n_\gamma}{2\rho^3}\,\frac{\beta}{\sigma^3_{\text{макс}}}\,E_{\text{мин}}\,s\left[\frac{1}{\beta-3}\left(\frac{s}{2R\sigma_{\text{макс}}}\right)^{\beta-3} - \frac{E_{\text{мин}}}{E_0}\,\frac{1}{2\beta-3}\left(\frac{s}{2R\sigma_{\text{макс}}}\right)^{2\beta-3} + \left(\frac{E_{\text{мин}}}{E_0}\,\frac{1}{2\beta-3} - \frac{1}{\beta-3}\right)\right] \quad (10)$$

is obtained; МИН = min, МАКС = max. The electron component is $dN/d\varepsilon = \pi R^2 \frac{\varepsilon}{\varepsilon_0} n_\gamma \sigma_\beta s(E_0)$. This expression is obtained assuming that the electrons with energies between 0 and E_0 (the maximum energy) are produced with equal probability, and that dE/dx = const. n_γ is the gamma flux, σ_β the interaction cross-section for gammas and wall, $s(E_0)$ the range of electrons with E_0 in the wall. There is 1 figure.

45457

S/892/62/000/001/020/022
B102/B186

AUTHORS: Kramer-Ageyev, Ye. A., Troshin, V. S.

TITLE: A time-of-flight microsecond spectrometer

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity ot izlucheniy, no. 1, 1962, 131-136

TEXT: A time-of-flight spectrometer is described which is designed for investigating intermediate-neutron spectra in the ranges 1 - 25 μsec and 10^2 - 10^5 ev. The pulsed source used had a frequency of 100 cps. The spectrometer can operate with two types of transmitters: with CHM-3 (SNM-3) boron counters, and with a lithium glass scintillator or a T-1 (T-1) scintillator. The counter pulses are fed via a cathode follower and a cable to the dscriminating amplifier "Siren'" and then to the time analyzer. Whereas the pulses from the counters have amplitudes from 0.1 to 0.01 v, those from the scintillators plus ФЭУ-29 (FEU-29) photomultipliers reach 12 v and have periods of 10-15 μsec, due to parasitic processes in the FEU. A reduction of the accelerating potential is not sufficient for blanking; a barrier potential has to be laid on the dynode

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so that the fast electrons are slowed down sufficiently and cannot cause secondary emission. Considering the great difference in pulse amplitudes, the preamplifier's input and output were provided with dynode limiters. The recording was small. Start pulse and transmitter pulse are fed via two channels and phase-inverters to the differentiating RC-circuit, then to flip-flop oscillators (140 v, 30 μsec) and via a White cathode follower to the mixer. The pulses going through the dynode discriminator and a cathode follower are integrated by an RC-circuit. The linearity of this circuit is not below 5%. The subsequent differentiating chain determines the time intervals between flip-flop oscillator period and time-of-flight with a 5% accuracy. After having passed through an M-500(M-500) amplifier the pulses are finally fed into an АИ-100 (AI-100) pulse-height analyzer. The total error of time analyzing does not exceed 7%. There are 3 figures.

TROSHIN, Vladimir Andreyevich, aspirant

Comparison of group-type and individual excitation systems of synchronous motors. Izv. vys. ucheb. zav. elektromekh. 7 no.4: 416-422 '64 (MIRA 17:7)

1. Kafedra elektroprivoda i avtomatizatsii promyshlennykh ustanovok Vsesoyuznogo zaochnogo energeticheskogo instituta.

AUTHORS: Novikov, K.A., Technician, Troshin, V.T. SOV-91-58-10-9/35

TITLE: The Parkerizing of Boilers (Fosfatirovaniye kotlov)

PERIODICAL: Energetik, 1958, Nr 10, p 13 (USSR)

ABSTRACT: In the boiler works of the Krasnodar Thermo-Electric Power Station (TETs) the system of parkerizing boilers has been simplified. The installation system has been so arranged that any phosphate pump can "work" on any boiler, using for this purpose a common line connecting the pumps. There is one diagram.

1. Boilers--Operation

Card 1/1

CA TROSHIN, Ya. K.

The measurement of the normal velocity of flames in acetylene-oxygen mixtures. Kh. A. Rakipova, Ya. K. Troshin, and K. I. Shchelkin (Acad. Sci., U.S.S.R.). *Zhur. Tekh. Fiz.* 17, 1397-1408(1947).—Stevens' soap-bubble method (*C.A.* 20, 2740) was used to measure flame speeds for mixts. with 20.0–76.6% C_2H_2. Up to 30% C_2H_2, the flame speeds remained const. during burning, but at higher C_2H_2 concns. the velocity was accelerated during burning. This effect was due to autoturbulence, in agreement with Landau's theory (*C.A.* 39, 2023[1]). For mixts. with 47.6–93.0% C_2H_2 there was an abrupt transition from combustion to detonation. H. K. L.

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β TROSHIN, Ya.-K.

Spin in the Region Near the Explosive Limit. (In Russian.) Kh. A. Rakipova, Ya. K. Troshin, and K. I. Shchelkin. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 17, Dec. 1947, p. 1409-1410.

Photographs prove that a very stable, electronic spin is present close to the limits of detonation of hydrogen-air, hydrogen-oxygen, and methane-oxygen mixtures. This indicates that explosive limits are determined by measurement of electronic spin limits.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TROSHIN, YA. K.

24-8-23/34

AUTHORS: Troshin, Ya. K. and Shchelkin, K. I. (Moscow).

TITLE: On the spin at the limits of gas detonation. (O spine u predelov gazovoy detonatsii).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.8, pp.142-143 (U.S.S.R.)

ABSTRACT: The relation between occurrence of spin detonation and the limit of gas detonation reached by changes in the concentration of an explosive mixture were determined in earlier work of the authors and their team (1,2). In the neighbourhood of the concentration limits of the detonation propagation (before damping the detonation) a spin detonation will inevitably occur. The aim of the work described in this paper was to elucidate whether spin detonation does occur on reaching the limit of detonation by any other method, i.e. by changing the pressure of the explosive mixture or reducing the tube diameter. Hydrogen-oxygen mixtures were investigated which are typical mixtures giving a normal (non-spin) detonation. Five photographs are included of the investigated detonation processes. It can be seen from the results that on going away from the stechiometric composition of the hydrogen-oxygen mixture one way or the

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On the spin at the limits of gas detonation. (Cont.)

24-8-23/34

other a clearly pronounced single head spin detonation is obtained which precedes the occurrence of a detonation limit. Some new results are described which include photographic recording of the propagation of the detonation in a mixture $2H_2 + O_2$ inside a tube with an internal diameter of 4 mm at a pressure of the explosive medium equalling 330 mm Hg col. It can be seen from the obtained results that irrespective of how the limit of detonation propagation is reached (by changing the concentration of the explosive mixture, by reducing the pressure of the mixture or by reducing the tube diameter) a spin will always occur prior to damping of the detonation. The here described experiments confirm earlier expressed conceptions on the instability of the plane detonation front at the limit when the shock wave moves away from the combustion front.
There are 5 photographs and 3 Slavic references.

SUBMITTED: May 27, 1957.

AVAILABLE: Library of Congress

Card 2/2

TROSHIN, Ya.

"The Generalized Hugoniot Adiabatic Curve."

paper presented at VII Intl. Combustion Symposium, Aug-Sep 58, Oxford

Comments: B-3,118,291

TROSHIN, Ya. K.

"The Generalized Hugoniot Adiabatic Curve."

paper submitted at 7th International Symposium on Combustion, London/Oxford. 27 Aug - 3 Sep 58.

SOV/24-59-2-1/30

AUTHOR: Troshin, Ya. K. (Moscow)

TITLE: The Lower Segment of the Hugoniot Curve Considered as a Series of Points Representing the Combustion in the Chamber of a Reactive Motor (Nizhnyaya vetv' krivoy Gyugonio kak sovokupnost' tochek, opisyvayushchikh rezhimy goreniya v kamerakh reaktivnykh dvigateley)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 2, pp 3-12 (USSR)

ABSTRACT: An attempt is made by the author to show that a whole segment of a weak deflagration zone AG of the Hugoniot curve, Eq (1.3), (Fig 1), has a physical significance and describes the actual combustion in tubes. The combustion is described as illustrated in Fig 2, where the turbulent zone of the flame is assumed as being of a uniform character. The heat of combustion Q and the ratio $c_p/c_v = k$ are known. Then the motion and energy of the gas in transition from state 1 to state 3 (Fig 2) can be determined from the Michelson's curve, Eqs (1.1) and (1.2); the velocity of the gas can be found from Eq (1.4). It is evident from Eq (1.1) that the combustion takes place only when $p_3 < p_1$ and that the flame front is equal to the cross-section of the tube F (Fig 2A)

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The Lower Segment of the Hugoniot Curve Considered as a Series of Points Representing the Combustion in the Chamber of a Reactive Motor

for the normal combustion $u_1 = u_n$. This is expressed by the curve AG below the point A . When the flame front increases, i.e. $S > F$ (Fig 2, ℓ, m), the initial velocity of the gas flow becomes $u_1 = u_n S/F$ and the velocity of products of the reaction u_3 increases while the pressure p_3 decreases. Such a state of combustion corresponds to an underdeveloped deflagration represented by the points ℓ and m on the curve AG . A further increase of the flame front increases the velocity of the products of reaction to that of sound (Fig 2G) and a fully developed deflagration takes place (point G on the curve AGL) . The above can be explained by the formulae (1.2), (1.3) and (1.5). The latter is defined by the Michelson curve IGT, the deflagration segment of the Hugoniot curve AGL and the Poisson adiabatic curve RGN ,all intercepting at the point G . The deflagration

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illustrated in Fig 2 can also be applied to the case when the pressure in the zone 1 (p_1) is much greater than that of the atmosphere. This is illustrated in Fig 3, showing the underdeveloped deflagration in the rocket combustion chamber comprising the de Laval nozzle. In this case, the cross-section F and the values k, p_1, ρ_1, p_0 are known and the throat F_* is determined from Eq (1.7). The method of determination of the parameters of such a rocket motor is described by an example where the following are given: the atmospheric pressure equal to that at sea level; fuel - a mixture of ethyl spirit and oxygen;

$$k = 1.3, \quad Q = 960 \frac{\text{k cal}}{\text{kg mixt}}, \quad p_1 = 310\,000 \frac{\text{kg}}{\text{m}^2},$$

$$\frac{p_1}{p_0} = 30, \quad \rho_1 = 4.84 \frac{\text{kg.sec}^2}{\text{m}^4}, \quad \frac{p_1}{\rho_1} = 6.42 \times 10^4 \frac{\text{m}^2}{\text{sec}^2},$$

The Lower Segment of the Hugoniot Curve Considered as a Series of Points Representing the Combustion in the Chamber of a Reactive Motor

$$\frac{Q}{p_1/\rho_1} = 62.7 \ , \quad F = 290 \text{ cm}^2 \ , \quad V_k = 6.9 \, \ell \ ,$$

$$H_u = 2080 \frac{\text{k cal}}{\text{kg mixt}} \ , \quad u_n \approx 3.0 \frac{\text{m}}{\text{sec}} \qquad (2.1)$$

The calculations should be performed in the following order: first, the value of the effective heat of combustion Q is found from Eq (2.2) where D - velocity of detonation 2356 m/sec. Then the values of $(M_1)_G$, $(\rho_1/\rho_3)_G$, $(p_3/p_1)_G$, are defined from Eqs (1.5) and (1.6) for the full deflagration, i.e. $M_3 = 1$, $F/F_* = 1$. For the underdeveloped deflagration the value of p_3/p_1 should be predetermined, which, together with ρ_1/ρ_3 from Eq (1.3), is used for the construction of the lower segment of the Hougen curve (Fig 4). The point G characterising the fully developed deflagration is then determined. Further, M_1 , M_3 and F/F_* are found from Eqs (1.2), (1.4) and (1.7), while the input q , velocity of products of reaction u_4 , thrust P , specific thrust P^0 and M_4 are found from Eqs (2.3)-(2.6). The thermodynamic efficiency is determined from Eqs (2.7)-(2.9). The output of the combustion chamber is found from Eq (2.10) and the rate of flame regulation is found from Eqs (2.11) and (2.12). The results of calculations are given in Figs 4, 5 and 6 and in Table 1. The problem of the flame expansion (spread) in the fuel mixture with the reaction products escaping through the deLaval nozzle can be explained when the formulae

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The Lower Segment of the Hugoniot Curve Considered as a Series of Points Representing the Combustion in the Chamber of a Reactive Motor

(2.13) to (2.22) and Figs 7-10 are considered. There are 10 figures, 2 tables and 13 references, of which 8 are Soviet, 4 English and 1 German.

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Institute of Chemical Physics, Academy of Sciences, USSR)

SUBMITTED: May 27, 1957.

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S/024/59/000/06/010/028
E081/E241

AUTHORS: Denisov, Yu. N., Troshin, Ya. K., and Shchelkin, K.I.
(Moscow, Novosibirsk)

TITLE: The Analogy Between Combustion with Explosive Waves and (Combustion) in a Rocket Engine

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 6, pp 79-89 (USSR)

ABSTRACT: The paper is a continuation of previous work (Refs 1, 2, 6, 7, 12, 13, 14, 17). The combustion chamber of a rocket engine is regarded as a cylindrical tube (Fig 1a). The fuel and oxidant is fed through the head 2 and forms the mixture in zone 1. After chemical conversion of the initial fuel in the combustion zone 2, gaseous products are formed in zone 3. [Fig 1. - a: scheme of combustion chamber; b: pressure diagram in schematic plane of explosive waves; c: schematic representation of a disturbance in the ignition zone.] The original state of the material is characterised by the initial parameters: pressure p_1, density ρ_1, temperature T_1, and flow velocity u_1, and by final parameters: pressure p_3, density ρ_3, temperature T_3 and flow

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The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

velocity u_3. Q is the energy evolved in passing from the initial to the final state. These quantities are connected by the Hugoniot equation (top of p 80), in which $\varkappa = (\gamma + 1/\gamma - 1)$ where γ is the ratio of specific heats c_p/c_v. The Hugoniot is shown in Fig 2. [Hugoniot adiabatics. For descriptiveness both branches of the adiabatics EM and KM are represented by the same energy evolution Q which is independent of the initial pressure of the reacting mixture] in coordinates p, V, where $V = 1/\rho$ = specific volume. Analysis of the physical significance of the branches of the Hugoniot curve shows that the deflagrational portion KΛ (Fig 2) can be regarded as the geometrical locus of points each of which corresponds to a given amount of boost of the combustion process in a rocket engine. It is shown that this process may be unstable, the instability being determined by Eq (5) in which ΔT is the temperature change of the gas in the disturbed region and τ is the induction period of ignition. The variation of τ with temperature is given by Eq (6), where E is the

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activation energy and R is the gas constant. If the constant k is independent of temperature and pressure, the criterion for instability of the plane ignition zone in explosive waves in Eq (7) or in terms of pressure, Eq (8). Calculation shows that instability exists for many gaseous explosive mixtures, and leads to high frequency vibrations (Fig 3 - spin explosion). Figs 4 and 5 show the so-called normal explosion (Fig 4 taken with a low resolving power equipment; Fig 5 taken with higher resolving power equipment; mixture $2H_2 + O_2$, $p_0 = 760$ mm Hg, magnification along the z axis: G = 3, time axis 1 mm = 1 µsec; in Figs 3, 4, and 5 the z axis is horizontal and the time axis vertical). Fig 5 shows periodic inhomogeneities in the explosive wave front. These were further investigated by means of a deposit of soot on the inside of a glass tube in which the explosion took place and left the traces shown in Fig 6. (Step trace of a pulsating explosion. Mixture $2H_2 + O_2$, $p_0 = 300$ mm Hg, d = 16 mm, G = 5; propagation direction of explosive waves from bottom to 4

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The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

top; the arrows show the tracks of periodic explosions; d is the diameter of the tube.) Analysis of experimental results shows that there are two types of explosive wave, spin (Fig 3, 7a, б) and pulsating (Fig 7в, 6) (Fig 7: step traces in explosive mixtures $2H_2 + O_2$, a,б: Spin p_o = 50 mm Hg, d = 16 mm, G for a = 1.3, for б = 2.25; в pulsating with n = 2, p_o = 130 mm Hg, d = 11 mm, G = 2.5.) These two types of wave are illustrated in Fig 8, together with graphs showing numerical results. (Fig 8. Dependence of the explosive wave parameters on initial pressure in the reacting mixture (mixture $2H_2 + O_2$; d = 16 mm). a - explosive velocity D and the mean temperature in the wave T_A; б - form of the leading front of the explosive waves at times t_1 and t_2; I - spin; II - pulsating with the number n of pulsations round the contour of the tube = 1; III pulsating with n = 2; в - frequency and number of pulsations n. Experimental points obtained by the photographic method plotted as squares; remaining points obtained by the trace method.) The criterion for

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The Analogy Between Combustion with Explosive Waves and Combustion in a Rocket Engine

combustion instability in a rocket engine chamber is written in the form (9), where $\triangle p$ is the drop in pressure per unit length of the chamber caused by combustion. The criterion (9) can be written approximately in the forms (10) and (10a). With sufficiently large γ, E, $\triangle p$, M_1 (Mach number), Q, and sufficiently small T_1 and p_1, the left hand side of (10) and (10a) may attain values of order unity. The stability of combustion front is then disturbed, and pulsations arise in it. The analogy discussed above between high frequency vibrations in a combustion chamber and in an explosion suggests that pulsations in these processes may have a similar nature and mechanism. There are 8 figures and 17 references, 13 of which are Soviet and 4 English.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR. Institut khimicheskoy kinetiki i goreniya SO AN SSSR (Institute of Chemical Physics, Ac. Sc. SSSR and Institute of Chemical Kinetics and Combustion, SO Ac. Sc. SSSR)

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SUBMITTED: June 13, 1959

10(3) SOV/20-125-1-29/67

AUTHORS: Denisov, Yu. N., Troshin, Ya. K.

TITLE: Pulsating and Spin Detonation of Gas Mixtures in Pipes (Pul'siruyushchaya i spinovaya detonatsiya gazovykh smesey v trubakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 110-113 (USSR)

ABSTRACT: The present paper deals with the experimental investigation of the detonation-wave structure of a gas in a pipe. The time course of the process was recorded by photography and moreover, it was investigated by the "tracer method". When applying this method a "trace" is fixed, that is left over in the interior of the preserved detonation pipe by the irregular dynamic pressure at the front. For this purpose the vitreous detonation pipe was internally covered with a thin layer of soot. According to the results shown by the photographic recording, the detonation structure is changed from normal to a spin detonation, namely, depending on how the initial pressure of the explosive gas mixture varies with unchanged composition and given pipe diameter. The authors therefore investigated the detonation with different initial

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pressures p_0 of the stoichiometrically balanced oxygen mixtures with hydrogen, methane and acetylene. A normal detonation is usually observed in such mixtures at atmospheric pressure. With higher resolving power of the recorder, however, photographs of such an explosion wave exhibit the characteristic features of a spin detonation, namely, a striated structure of the afterglow and a wavy front line. By the tracer method rhomboid impressions on the pipe wall are observed, which are indicative of pulsating variations of the dynamic pressure at the detonation front in the presence of a high-frequency multihead spin. An analysis of the experimental data leads to the following conclusions: The screw-shaped and rhombic traces on the pipe walls are recorded by the points of discontinuity of the detonation-wave front (oblique compression jumps in which the reaction chiefly takes place). Apart from these points of discontinuity, also intense disturbances are recorded by the tracer method in a multihead-spin detonation, i. e. a flashing up that seizes the front periodically and very rapidly in the intervals

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Pulsating and Spin Detonation af Gas Mixtures in Pipes

between the adjacent points of discontinuity. This points to the discreteness and steadiness of such a detonation. The second figure illustrates the dependence of some parameters of the detonation wave on the initial pressure of the mixture. The front of the detonation wave is nonplanar and the actual curvature of the front is even larger than the recorded one. In the case of a multihead-spin detonation the front varies periodically in a coordinate system, which moves progressively with the mean velocity of the detonation wave. The results obtained from these considerations point to the possibility of subdividing the gas detonation in pipes into a pulsating and a spin process. The characteristics of both these types of detonation waves are shown in a table. The results of the work under review point to the periodic distribution of the chemical reaction within the individual ranges of the detonation-wave front. The authors thank Professor K. I. Shchelkin, Corresponding Member, AS USSR, for having discussed the present paper and for useful suggestions made.

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There are 3 figures, 1 table, and 9 references, 5 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: November 26, 1958, by Ya. B. Zel'dovich, Academician

SUBMITTED: November 15, 1958.

TROSHIN, YA. K.

paper submitted for the [illegible] Int'l Symposium on Combustion, Pasadena, California, [illegible] August - 2 September, [illegible]0.

4. Following is a list of the Soviet papers submitted to the combustion symposium:

L A Lovachev	The Dependence of Laminar Flame Properties on the Mechanism of Chain Reactions
L A Lovachev	The Theory of Flame Propagation in Systems Involving Branched Chain Reactions
NIKITIN, Ye.Ye	On the Mechanism of Non-Adiabatic Relaxation in Molecular Collisions
I N Denisov K I Shchelkin Ya K Troshin	Some Questions of Analogy Between Combustion in a Thrust Chamber and in a Detonation Wave
K I Shchelkin	On the Criterion of High-Frequency (screaming) Vibrations Generation in a Turbulent Combustion Chamber
A I Sertinov	A Simple Method for Determining Effective Activation Energies for Thermal Decomposition and Spontaneous Ignition of Certain Complex Molecules
L G Bolkhovitinov	On the Theory of Detonation Initiation by Impact
P A Tesner	The Energy of Activation of Gaseous Reactions with Solid Carbon
P A Tesner	Formation of Dispersed Carbon by Explosion and Thermal Decomposition of Acetylene
TESNER, P.A. RAFALKES, I.S. ROBINOVICH, Ye. Ya.	Formation of Dispersed Carbon in Hydrocarbon Diffusion Flames
BAZHANOVA, T.V. ZAYTSEV, S.G.	Effect of Dissociation on the Parameters of Reflected Shock Waves in Carbon Dioxide
ZAYTSEV, S.G. SOLOUKHIN, R.I.	Study of Combustion of Adiabatically Heated Gas Mixture
I N Sundukov E K Chetalin	Some Methods for Studying Two-Phase Fuel-Air Mixtures in a Flow
E K Chetalin	Propagation of Flame in Turbulent Flow of Two-Phase Fuel-Air Mixture
STUPOCHENKO, Ye. V. SAMUYLOV, Ye. V. PLESHANOV, A.S. ROZHDESTVENSKIY, I.B. STACHEKOV, I.P.	Thermodynamic Properties of Air at High Temperatures
A S Predvoditelev	Conditions of Regular Movement of Strong Shocks and Detonation
A S Predvoditelev	Some Remarks on the Regular Movement of Shocks with Spherical and Cylindrical Symmetry
A S Predvoditelev	Regular Motion of Shocks and of Detonation from the Viewpoint of Maxwell's Transfer Equations

TROSHIN, YA. K.

paper submitted for the 8th Intl Symposium on Combustion, Pasadena, California, 28 August - 2 September, 1960.

A N. Dremin	Detonation Parameters
P F Pokhil	The Mechanism of Combustion of Colloidal Powders
L S Kozachenko	The Combustion Mechanism and Burning Velocity in a Turbulent Flow
S M Kogarko	On the Burning Probability for Droplets of Liquid Atomized Fuel in a Turbulent Flow
S M Kogarko	Amplification of Compression Waves in the Combustion Zone
PLYUKHIN, B.I.	On the Stationary Theory for Heat Balance of Powder and Explosive Condensed Phases
Ya N Denisov Ya K Troshin	On the Mechanism of Detonative Combustion
E S Golovina G P Khaustovich	The Interaction of Carbon with Carbon Dioxide and Oxygen at Temperatures up to 3000°K
KHITRIN, L.N. RAVICH, M.B. KOTOVA, L.L.	The Carbon Residue Burning Characteristics of Solid Fuel
O A Tsukhanova	The Investigation of the State of Explosion Products Behind the Shock Wave
V A Popov ANISIMOV, V.Ye.	On the Ionization in the Flame Front

DENISOV, Yu.N.; TROSHIN, Ya.K.

Mechanism of combustion by detonation. PMTF no.1:21-35 My-Je '60.
(MIRA 14:8)

(Combustion) (Detonation)

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30987
S/124/61/000/009/008/058
D234/D303

11.8300

AUTHORS: Denisov, Yu.N. and Troshin, Ya.K.

TITLE: Thermo-gas-dynamic model of a pulsating detonation

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 15, abstract 9 B81 (V sb. "3-ye Vses. soveshchaniye po teorii goreniya", v. 1, M., 1960, 200-207)

TEXT: A thermo-gas-dynamic model of a pulsating detonation is offered. The opinion of the authors is that the results of calculations according to this model are the second approximation to the calculation of the three-dimensional process, if one assumes the one-dimensional hydrodynamical theory of detonation as the first approximation. The authors start from the idea of oblique collisional jumps being decisive in the mechanism of propagation of pulsating detonation, while in a spin detonation the independent existence of an oblique jump of detonation is possible. Results of data processing are given for experiments on detonation of the mixture $2H_2 + O_2$ X

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which show that the mechanism of propagation of detonation combustion consists in the periodical formation of double reflection in the wave (during collision of oblique jumps of condensation) and disturbance of this reflection by perturbation from the chemical reaction of self-ignition caused by it. [Abstracter's note: Complete translation]

X

28374
S/124/61/000/008/019/042
A001/A101

11.8300

AUTHORS: Denisov, Yu.N., Troshin, Ya.K., Shchelkin, K.I.

TITLE: On a certain analogy between burning in a rocket engine and in a detonation wave

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 36, abstract 8B221 (V sb. "3-ye Vses. soveshchaniye po teorii goreniya. T.1". Moscow, 1960, 193 - 199)

TEXT: Without considering physico-chemical processes in the combustion chamber of a rocket engine, the authors identify the burning zone in the rocket engine chamber with the zone of strong discontinuity in which a substance goes over from the initial state into the final state at the expense of energy liberation. The state of perfect gas formed at fuel evaporation is assumed for the initial state. In this schematization, operational conditions of rocket engines are represented by Gugonio adiabatic curve (its lower branch). Based on a certain analogy of burning in a rocket engine and in a detonation wave, the authors apply to burning in the rocket engine the criterion of instability of the plane front of burning at detonation

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$$\frac{d\tau}{dT} \Delta T > \tau$$

(where ΔT is gas temperature change in the disturbance zone), delay of ignition τ is connected with temperature by the equation $\tau = K e^{E/RT}$. These relations, together with the Gugonio adiabatic curve with heat supply q, yield the following condition for excitation in the rocket engine of oscillations with frequency $\nu = (1/\tau)\ (d/2\lambda)^2$:

$$(\gamma - 1)^2 \frac{E}{RT_1} \frac{M_1^2 q}{a_1^2} \gg 1$$

Here τ and λ are certain delay time and width of the burning zone, d is chamber diameter, M_1 is Mach number for gas before the burning zone.

K. Artamonov

[Abstracter's note: Compl·te translation]

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28348 S/124/61/000/007/010/044
A052/A101

1.1210
11.8200

AUTHORS: Volin, B. P., Troshin, Ya. K., Filatov, G. I., Shchelkin, K. I.

TITLE: On the reacton-kinetic nature of heterogeneities in the shock front and the part played by them in the process of propagation of gas detonation

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 7, 1961, 7, abstract 7B47 ("Zh. prikl. mekhan. i tekhn. fiz." no. 2, 1960, 78-89)

TEXT: The process of origination of heterogeneities in the forward front of a flat detonation layer is considered theoretically. The disturbance develops in the ignition front and propagates over the front with the velocity of sound in the shock-compressed gas a_1. In the direction of propagation of detonation the disturbance is drifted by the flow behind the forward shock front and overtakes the front at the moment

$$t = \frac{\lambda}{a_1 - (D - \omega)}$$

where λ - the width of detonation zone, D - the velocity of detonation, ω - the

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On the reacton-kinetic nature ...

velocity of shock-compressed gas in the laboratory system of coordinates. By this moment t the disturbance over the ignition front will have the diameter

$$\Delta y \sim \tau D \frac{2(\gamma - 1)/(\gamma + 1)}{1 - 1/\sqrt{2\gamma/(\gamma - 1)}} \gamma D \beta \qquad (1)$$

where τ - the period of the induction of ignition, $\gamma = c_p/c_v$ - the ratio of specific heats, $\beta = 0.5 \div 0.4$ at $\gamma = 1.4 \div 1.3$. The identification of Δy with the experimentally observed dimension of heterogeneities enables one to consider equation (1) as the dependence of the mean dimension of such heterogeneities on reaction-kinetic and gas-dynamic factors. The results of experiments on obtaining the track imprints of detonation wave on faceplates covered prior to the experiment with a thin layer of carbon black are described. Another proof has been found of the existence of heterogeneities, not only near the wall of the detonation tube, but over the whole surface of the detonation front in the tubes as well. It is shown that such heterogeneities exist also in the spherical detonation wave. It is found out that the total number of heterogeneities over the whole detonation front increases with the surface of the front. The authors arrive at a conclusion that spherical detonation, like the gas detonation in tubes, is pulsating one, that heterogeneities in its front emerge spontaneously, and that these heterogeneities are not connected with the presence

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of walls of the detonation container. To bring the fact of multiplication of pulsations with the increase of the surface of detonation front in agreement with the periodical mechanism of detonation, the authors consider it necessary to complement the conception of the mechanism of detonation combustion, given in another study (Denisov, Yu. N., Troshin, Ya. K. Zh. prikl. mekhan. i tekhn. fiz. no. 1, 1960, 21-35), by introducing into the detonation cycle one more link of instability being the source of emergence of breaks in the shock front. A criterion of the limit of existence of the spin and pulsating detonations is also given. There are 23 references.

Yu. Denisov

[Abstracter's note: Complete translation]

Inst. Chem. Physics, AS USSR

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S/057/60/030/04/08/009
B004/B002

AUTHORS: Denisov, Yu. N., Troshin, Ya. K.

TITLE: The Gas Detonation Structure in Pipes

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 4, pp. 450-459

TEXT: The authors investigated the course of detonation propagation in pipes in one direction, and also in the collision of two detonations having opposite directions, by means of slow-motion and Mach's track method (fixation of detonation wave tracks in the pipe by means of carbon black). The photorecorder of type ЖФР-1 (ZhFR-1) designed by the IKhF AN SSSR (Institute of Chemical Physics of the AS USSR), was used for the slow-motion picture. The detonation took place at different initial pressures in stoichiometrical mixtures of H, CH_4, C_2H_2 with O_2, and C_2H_2 with O_2 and Ar. The scheme of the test apparatus is shown in Fig. 1. Figs. 2-5, 8, 9 show the slow-motion pictures and tracks of carbon black. Fig.6 gives the dependence of the characteristic detonation

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wave values on the initial pressure, and Fig. 7 gives schemes of different detonation wave structures. The authors obtained the result that the front of the detonation is not plane, and that the bends of this front play a leading part in the propagation of chemical reactions. The detonation can be divided into a spin detonation and a pulsating detonation. The wave propagation of the chemical reaction in the pulsating detonation has a periodic character. The spin detonation is considered to be a limiting case of the pulsating detonation. The tangential component and the frequency of the spin detonation could be determined by means of the track method. A table gives the characteristic features of spin and pulsating detonations. The chemical reactions are periodical and localize in individual sections of the wave front. The authors thank Professor K. I. Shchelkin, Corresponding Member of the AS USSR for discussions. There are 9 figures, 1 table, and 15 references: 10 Soviet, 3 British, 1 German, 1 Austrian, and 1 French.

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The Gas Detonation Structure in Pipes

S/057/60/030/04/08/009
B004/B002

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics of the AS USSR). Institut khimicheskoy kinetiki i goreniya CO AN SSSR (Institute of Chemical Kinetics and CO Combustion of the AS USSR)

SUBMITTED: January 26, 1959

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L 08578-67 EWP(m)/EWT(1)/EWT(m) WW/JW/JWD/WE

ACC NR: AP6033492 SOURCE CODE: UR/0413/66/000/018/0115/0115

INVENTOR: Grishin, S. D.; Gusev, V. I.; Denisov, Yu. N.; Mironov, S. G.; Serbinov, A. I.; Troshin, Ya. K. 52 B

ORG: none

TITLE: Shock tube for determining the ignition induction period of combustible mixtures. Class 42, No. 186166

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 115

TOPIC TAGS: shock tube, fuel ignition, fuel ignition induction period, air fuel combustion

ABSTRACT: The proposed shock tube for determining the ignition induction period of combustible mixtures contains a test section and a section separated by a membrane for initiating the detonation. In order to decrease the size of the shock tube, the section for initiating the shock is made in ~~the~~ form of a helix (see Fig. 1). Orig. art. has: 1 figure. [WA No. 68]

UDC: 534.222.2.002.51

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